

**ABSTRACT****STATE MACHINE MODELLING**

5           To handle non-determinism in a state machine model, different non-deterministic outcomes are represented in a system by 'worlds'. A world represents the state, history and variable values result of event processing for every permutation occasioned by non-determinism. The system clones a world (233) so as to represent a sequence uniquely. When any two resultant worlds  
10 are identical, one is deleted (235). When plural worlds exist, the system accepts an event for processing and processes the event in all of the extant worlds (232, 234). The embodied system causes the generation and processing of a set of transition sequences based on fork and race-condition non-determinism for each extant world. The system allows permutation of  
15 set-transit actions, and generates additional worlds for each permutation. The system also allows for mid-transition-flight firing of additional events, which results in additional worlds in which the remainder of the transition algorithm is processed. The system also has supporting functionality, including the ability on request to output all transitionable events, to provide all state, variable and  
20 history data, and to validate state, variable and/or history information.

(Figure 23)